

REMARKS

Preliminarily, Applicants respectfully request the Examiner to return initialed Form PTO/SB/08 A&B attached hereto, listing three foreign patent documents previously submitted in the Information Disclosure Statements filed May 18, 2006 and August 18, 2006. The Examiner lined-out these references because Applicant is said to not have provided copies of the same.

The undersigned advises that the subject references can all be found on PAIR. JP 46-23245 is attached at the end of JP 37-3127 (first entry in PAIR for August 18, 2006). JP 3-500547 and its English language Abstract and JP 2000-198813 and its English language Abstract are entries 3 and 4 in PAIR dated August 18, 2006. JP 46-23245 relates to a method for stabilizing the carboxyl group without using any alkali metal or other metal which comprises treating a fluoropolymer as obtained after polymerization with fluorine gas (page 2, lines 27-31 of the specification). JP 37-3127 relates to a method of stabilizing carboxyl-group containing fluoropolymers which comprises adding water to a powder as obtained after polymerization and heating the mixture at an elevated temperature (page 1, lines 21-25 of the specification). Form PTO/SB/08 A&B is attached hereto for the Examiner's convenience.

In response to the objection to the disclosure, Applicants present a replacement Abstract which complies with USPTO guidelines. Withdrawal of the objection is requested.

In response to the claimed objection, claims 1 and 7 have been amended to replace "mass" with the term "content" as used in Table 1 at page 27 of the specification. Withdrawal of the claim objection is respectfully requested.

Review and reconsideration on the merits are requested.

Claims 1-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 6,451,962 to Hiraga et al. Also, claims 1-5 were rejected on the grounds of non-statutory obviousness-type double patenting as being unpatentable over claims 1-3 and 6 of U.S. Patent 6,451,962 to Hiraga et al.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the following remarks and the Declaration evidence submitted herewith.

Claim 1:

The method of claim 1 requires conversion of the specific unstable terminal group or groups (P) to $\text{-CF}_2\text{H}$ by melt-kneading in the presence of water.

The specific unstable terminal group (P), when heated in the presence of water, can be converted to a stable terminal group, $\text{-CF}_2\text{H}$, by the reaction mechanism represented by reaction formula (1):



where -COX represents the specific unstable terminal group (P) (page 11, lines 14-20 of the specification).

Thus, the method of producing a fluoropolymer of the invention can cause the above stabilization reaction to occur even in the absence of the alkali metal element or alkaline earth metal element (page 9, lines 5-9 of the specification).

It is well known that the metal residue may possibly cause degradation and decomposition of the fluoropolymer at high processing temperatures. This decomposition may possibly lead to discoloration (page 2, lines 12-15 of the specification).

Although Hiraga discloses that in the case of alcohol, an end group becomes an end group of alkyl ester (col. 4, lines 61-62), Hiraga does not disclose the melt-kneading of a fluororesin having the specific unstable terminal group (P).

Furthermore, Hiraga teaches that the reaction accelerating agent is preferably added together with water (col. 4, lines 63-65). Thus, Hiraga leads away from rather than towards this invention.

Consequently, it is respectfully submitted that method claims 1-6 are patentable over Hiraga.

Claim 7:

The fluoro-polymerised material of claim 7 comprises a fluoropolymer having $-\text{CF}_2\text{H}$ terminal groups and not more than 20 unstable terminal groups (Q) per 10^6 carbon atoms. Further, the content of the alkali metal element and/or alkaline earth metal element is not greater than 2 ppm of the fluoro-polymerised material.

Therefore, the fluoro-polymerised material does not deteriorate moldability and does not cause degradation and decomposition. (page 1, line 17 and page 2, lines 12-15 of the specification.)

With regard to the content of the alkali metal element and/or alkaline earth metal element, the result shown in the Declaration under Rule 132 of Yoshiyuki Takase submitted herewith, is unexpected. Namely, the procedure of Example 1 of the specification was followed, except that a 0.1% (by mass) aqueous solution of potassium carbonate was added to the fluoropolymer (A) so that the potassium carbonate (K_2CO_3) reached 3 ppm by mass. After evaporating the moisture, the fluoropolymer was supplied to an extruder and the rate of addition of air was 0.078 kg/hr. In the heating test (heating at 400°C for 5 hours in N_2), the

fluoropolymers of Comparative Example 1 (total metal content: 14 ppm) and Comparative Example 3 (total metal content: 3 ppm) were discolored. The above-noted results show criticality in an alkali metal element or alkaline earth metal element content of not greater than 2 ppm as claimed.

On the other hand, Hiraga discloses a method of stabilizing a fluorine-containing polymer by melt-kneading a polymer having unstable groups. (See Abstract.) The method does not provide a polymer having a content of said alkali metal element and/or alkaline earth metal element of not greater than 2 ppm.

For the above reasons, it is respectfully submitted that claims 7-9 are also patentable over Hiraga, and withdrawal of the foregoing rejections is respectfully requested.

Applicants comment on patentability of claim 6 (product-by-process) as follows.

Claim 6 is directed to a fluoropolymer obtained by the method of producing a fluoropolymer according to Claim 1. The fluoropolymer of claim 6 (product) is patentable over the applied prior art for the same reasons that claim 7 directed to fluoro-polymerized material is patentable over the applied prior art. For example, similar to claim 7 which limits the content of the alkali metal element and/or alkaline earth metal element to not greater than 2 ppm, the product of claim 6 (as made by the method of claim 1) also limits the content of the alkali metal element or alkaline earth metal element to not greater than 2 ppm of the composition under melt-kneading.

Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Hiraga et al, further in view of EP 1 260 526 (EP '526).

Applicants rely on the response above with respect to the rejection of claim 7 over Hiraga et al (US 6,451,962) alone. Claim 10 secondarily depends from claim 7. Hiraga does not

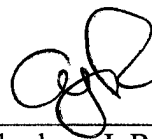
provide a polymer having a content of the alkali metal element and/or alkaline earth metal element of not greater than 2 ppm as claimed in claim 7. EP '526 also does not meet this limitation of claim 7.

Withdrawal of all rejections and allowance of claims 1-10 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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Date: June 9, 2008